

SILENE CAROLINIANA

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(Plate 584)

THE NECESSITY of verifying the name of a cultivated plant, received as *Silene Wherryi* Small, has led to a review of the relationships of that species to *Silene caroliniana* Walter and *S. pensylvanica* Michaux. A survey of the literature indicates that no author has discussed the status of *S. Wherryi* since it was described by Small (1926), while the matter of the proper designation for the Wild Pink of the northeastern states was left unsettled by Weatherby and Griscom (1934).

In the present study, the writer has examined all of the material, representing the three names involved, available in the following institutions: Bailey Hortorium, Cornell University (BH); Brooklyn Botanic Garden (Bk); herbarium of the Department of Botany, Cornell University (Corn); herbarium of Duke University (Duke); Gray Herbarium, Harvard University (G); herbarium of the University of Michigan (Mich); Missouri Botanical Garden (M); New York Botanical Garden (NY); Academy of Natural Sciences of Philadelphia (Ph); and United States National Herbarium (US). He is indebted to the officers of these several institutions for the privilege of borrowing and studying their specimens. He also wishes to express his appreciation to Mr. C. A. Weatherby and to Mr. C. C. Deam for various helps and courtesies.

The conclusions reached here represent the result of looking over somewhat more than two hundred herbarium sheets. With the exception of four sheets which were designated as hybrids, all were originally labelled with a binomial name, as either *S. caroliniana*, *S. pensylvanica*, or *S. Wherryi*. Despite the fact that the same collection might bear a different name in each of three herbaria, indicating confusion and possible intergradation, no varietal names appear on any of the sheets, nor does it appear that any varietal combinations have ever been made. From available herbarium material, it was evident that identifications of Wild Pinks have been made in the most arbitrary fashion and that the differences between the three so-called species had never been properly elucidated.

As a preliminary attempt to clear the confusion, the original descriptions of the three names were consulted. On a basis of these diagnoses, a tentative key was prepared. The descriptions were full

enough to permit this. *Silene caroliniana* was said to have tomentose obtuse basal leaves, *S. pensylvanica* was described as viscid-pubescent with lanceolate leaves, while *S. Wherryi* was differentiated by the non-glandular hairs of the calyx and other characters. Study of the type of *S. Wherryi* and of specimens from Pennsylvania and South Carolina, which seemed to agree with the descriptions of the other two species, further helped to indicate the proper interpretation of the three names. With this preparation and completely disregarding geographical data on labels, all specimens were run through the key and sorted into three piles. The result was amazing. Plants in the pile for *S. pensylvanica* were from southern New Hampshire and Massachusetts south to northern North Carolina and west to eastern Ohio and northeastern Tennessee; those in the pile for *S. caroliniana* were from southern North Carolina, South Carolina, and Georgia; and those in the pile for *S. Wherryi* were from southern Ohio, Kentucky, Missouri, and Alabama. There were only two difficulties to spoil this picture. One was a pile of five sheets which would not fit the key at all—and for good reasons; one represented *Phlox subulata* and the other four *Silene virginica*. The other difficulty consisted of a small pile of sheets representing specimens which seemed to bridge the two gaps which should exist if the three names under discussion really represent species. Occasional specimens from Virginia and Maryland, which seemed more like *S. pensylvanica*, also somewhat suggested *S. caroliniana*. Likewise, certain specimens from West Virginia and western Virginia seemed to be intermediate between *S. Wherryi* and *S. pensylvanica*. Unfortunately, the areas where one would expect intermediates to occur were mostly deadspots. There was little available material from North Carolina or from the parts of Ohio, Kentucky, and Tennessee in which one might be interested. Yet, the facts as determined from this little survey seem rather definite and at the same time different from the interpretation of contemporary collectors who have used one of the three available binomials and perhaps have not much considered the problem involved.

For a long time, the Wild Pinks of the Atlantic Coastal Plain and of the Mississippi valley were considered the same. Superficially the plants from the two regions appear similar. It was not until the critical field-student, Prof. E. T. Wherry, and Dr. J. K. Small attacked the problem that the differences between the populations were

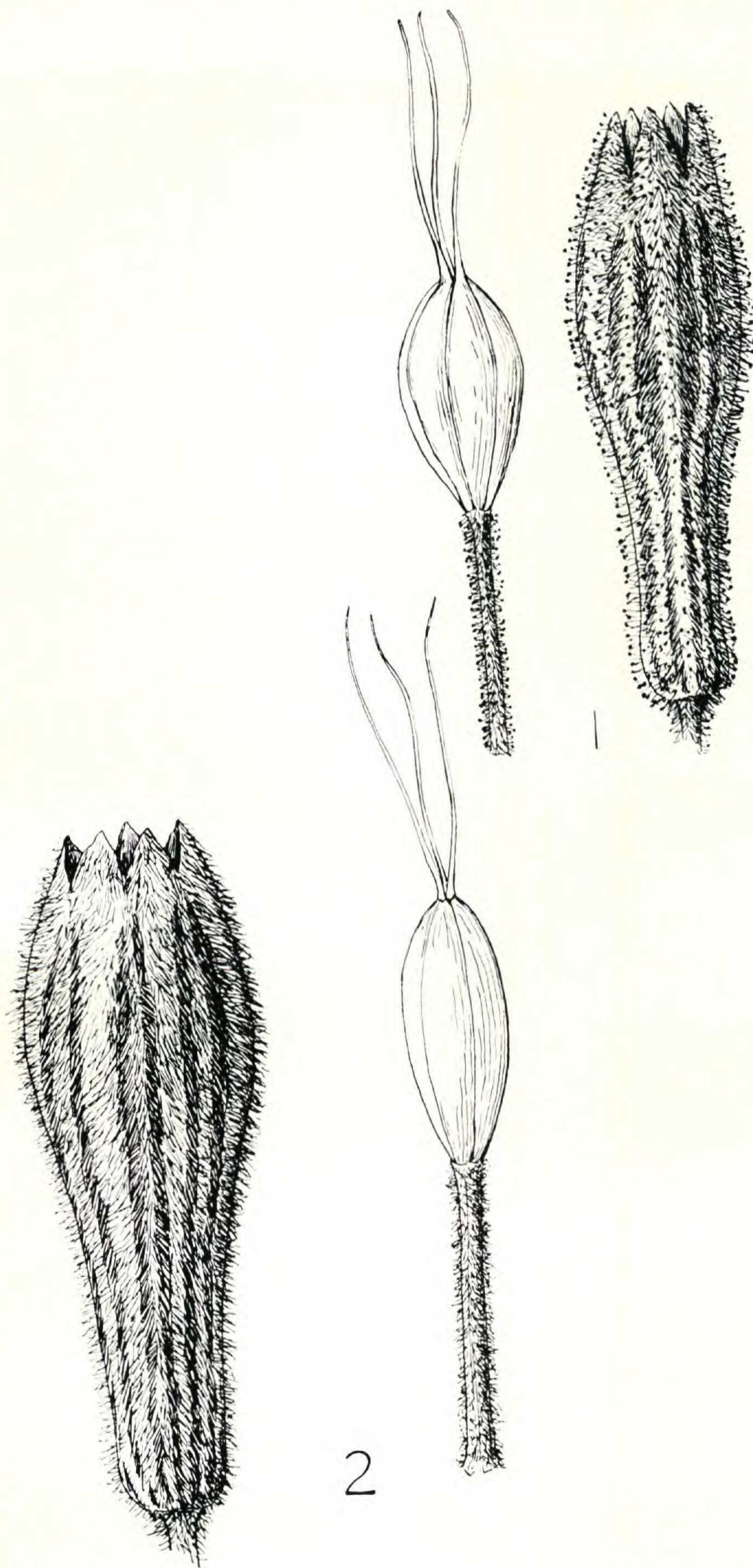
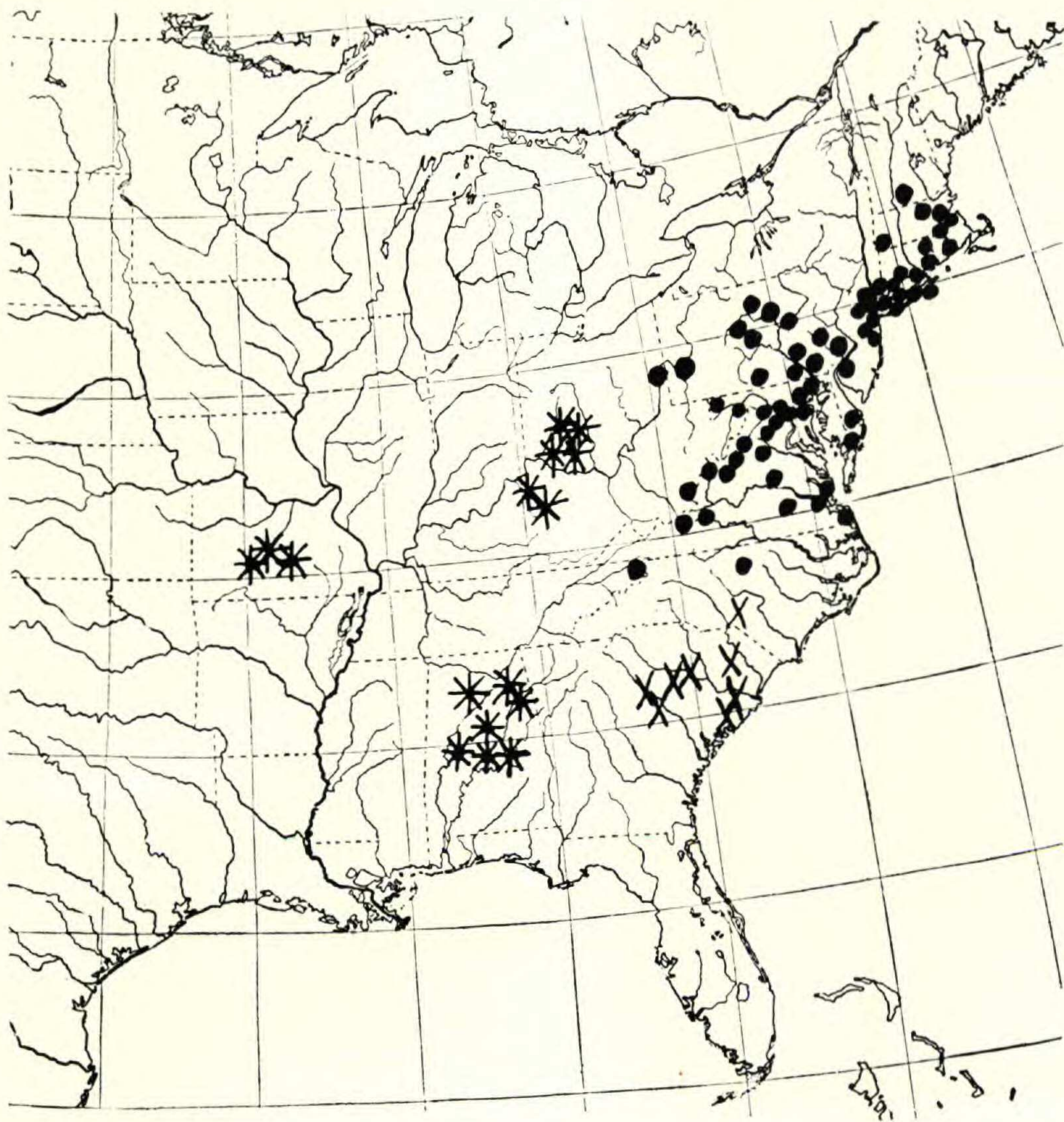


FIG. 1, pistil and calyx of *SILENE CAROLINIANA* ssp. *PENNSYLVANICA*, $\times 4.7$;
FIG. 2, pistil and calyx of *S. PENNSYLVANICA* ssp. *WHERRYI*, $\times 4.7$.

noticed. Today these differences are at once apparent to the trained eye; but, since the untrained eye still will think of the whole complex as one species, while intermediates do occur, indicating continuity in the series, it seems better to interpret these technical differences as



Map 1. Range of *SILENE CAROLINIANA* ssp. *TYPICA* (X), of ssp. *PENNSYLVANICA* (●), and of ssp. *WHERRYI* (*).

representing geographical races or subspecies, not full species. Data are not today available to indicate whether these races represent populations diverging from a common ancestor or populations coming together, nor is there any cytological evidence to permit theorizing. The writer can only state what he knows from observation: that there are three decided morphological tendencies in the Wild Pinks; that

these are very strongly correlated with geographical range; and that occasional intermediates between the three tendencies do occur. As the proper name for this aggregate species, that of Walter, *S. caroliniana*, which is the oldest, must be employed.

Silene caroliniana Walter, *sensu latiore*, may now be characterized as a perennial herb with a stout caudex, 4–32 cm. high, with a rosette of basal leaves varying from narrowly oblanceolate and acute to broadly oblong-spatulate and blunt, either glabrous on both surfaces or rather densely pubescent, always ciliate, tapering into hairy petioles; stems and cauline leaves puberulent or pubescent with glandular or eglandular hairs; cauline leaves linear-oblong, lanceolate, or ovate; inflorescence cymose with the flowers short-stalked; calyx narrowly or broadly tubular, with the pubescence glandular or eglandular; petals pale or dark pink, slightly notched, with the claws equaling or exceeding the calyx; stamens 10; styles 3, equaling or exceeding the ovary.

Key to the subspecies of *SILENE CAROLINIANA*

- A. Rosette-leaves oblong-spatulate, rarely oblanceolate, blunt or rarely mucronate, 0.5–3.0 cm. broad, rather densely pubescent on both surfaces and on margins with short white hairs. a. *Silene caroliniana* ssp. *typica*.
- AA. Rosette-leaves oblanceolate, elliptic-lanceolate, or rarely spatulate, mostly acute or rarely blunt, 0.1–2.0 cm. broad, glabrous on both surfaces, ciliate. . . . B.
- B. Calyx narrowly tubular, densely glandular-pubescent; claws of petals slightly exceeding the calyx. b. *Silene caroliniana* ssp. *pennsylvanica*.
- BB. Calyx broadly tubular, densely pubescent or puberulent with white eglandular hairs; claws of petals usually equaling or rarely exceeding the calyx. c. *Silene caroliniana* ssp. *Wherryi*.

SILENE CAROLINIANA Walter, ssp. **typica**. *S. caroliniana* Walter, *Flora Caroliniana*, p. 142 (err. typ. 241). 1788. In the absence of an authentic type specimen annotated by Walter himself, the species is best interpreted from the original description: "*Silene caroliniana* floribus magnis, petalis obtusis, calycibus cylindricis, panicula subtrichotoma; foliis radicalibus tomentosis obtusis, caulinis oppositis acutioribus. Varietates. Petalis supra coccineis, subtus incarnatis; et petalis utrinque incarnatis."—Perennial, 7–20 cm. high; rosette-leaves oblong-spatulate, rarely oblanceolate, blunt or rarely mucronate, 3–12 cm. long, 0.5–3.0 cm. broad, rather densely pubescent on both surfaces and on margins with short white hairs; stalks 4–19 cm. long, puberulent to hirsute, with hairs glandular towards upper portion of stems; cauline leaves linear-oblong, acute at apex, 1.3–4.8 cm. long, 0.2–0.8 cm. broad; inflorescence cymose; calyx narrowly tubular, 1.5–1.7 cm. long, densely glandular-pubescent; petal-blades 0.8–1.3 cm. long, with claws slightly exceeding calyx.

Weatherby and Griscom (1934) have pointed out the distinctive characters of this population: pubescent with long matted hairs; radical leaves oblanceolate to broadly obovate, obtuse or mucronulate; petals white or tinged with pink; teeth of the glandular-viscid calyx red. Weatherby's collection, no. 6114, from dry open mixed woods south of the Congaree River opposite Columbia, may well be taken as representative of the plant described by Walter.

In a letter to the writer, Mr. Weatherby has furnished a description and details concerning a specimen¹ in the Walter herbarium at the British Museum. The original label reads "*Silene an virginica* ?", but some one has written on the page in pencil, "*S. caroliniana* Walter." The description furnished by Mr. Weatherby indicates that the basal leaves of this specimen are oblanceolate and acutish and that the pubescence is most nearly matched by a collection from near Hazelgreen, Laclede Co., Missouri, *E. J. Palmer 39198*, but the calyx is more slender and the flowers are smaller than in the Palmer specimens. Since the Missouri plants represent *Silene Wherryi* Small, which is characterized by the broad tubular calyx, the specimen at the British Museum is probably not to be referred to that. Further, if the basal leaves of the supposed type are oblanceolate and acutish, with pubescence as in the Palmer specimens, then Walter's description, which definitely states that the basal leaves are tomentose and obtuse, does not check with the specimen that he supposedly gave to Fraser. Of twelve collections, some of them represented in several herbaria, from South Carolina and Georgia, all agree with the description in the *Flora Caroliniana*. In view of this situation it seems better to interpret Walter's species, not by the specimen in the British Museum, but in accordance with the original description and the series of specimens at hand from South Carolina and Georgia.

The ssp. *typica* is a plant of sandy open woods, dry sandy pine lands, and rocky woods. It flowers from late March through April. The range includes the coastal plain and lower piedmont province of southern North Carolina, South Carolina, and Georgia. NORTH CAROLINA. Richmond Co.: Hamlet, *C. S. Williamson* (Ph). SOUTH CAROLINA. Aiken Co.: Warrenville, *E. J. Palmer 39882* (G). Berkeley Co.: Santee Canal, *H. W. Ravenel* (G). Darlington Co.: Darlington, *L. F. Ward* (NY, US). Dorchester Co.: Summerville, *H. H.*

¹ Since this manuscript was submitted for publication, the writer has received, through the kindness of Mr. A. H. G. Alston of the British Museum (Natural History), a photograph of the specimen of *Silene caroliniana* in the Walter herbarium. Study of this photograph necessitates no changes in the above text.

Rusby (NY). Lexington Co.: Columbia, *C. A. Weatherby* 6114 (Duke, G, NY, US). Richland Co.: Columbia, *K. A. Taylor* (Mich). Also near Ashley River, *B. L. Robinson* 58 (G) and without specific locality, *L. R. Gibbes* (US). GEORGIA. Burke Co.: bank of Rocky Creek, Waynesboro, *R. M. Harper* 2075 (G, M, NY, US). Richmond Co.: Augusta, *S. T. Olney & J. Metcalf* 17 (G). Also other specimens without complete data.

SILENE CAROLINIANA ssp. ***pensylvanica*** (Michx.), n. comb. Figure 1. *S. pensylvanica* Michx., *Flor. Bor.-Am.* 1: 272. 1803. The writer has formed his concept of this species from the original description: "*S. viscido-pubens*: foliis cuneatis, caulinis lanceolatis: cauliculis in summitate paucifloris: petalis leviter emarginatis, subcrenatis. *Obs.* Affinis *S. Virginicae*: humilis, cauliculis simpliciusculis: petala obtusissima, purpurascentia. *Hab.* in Pennsylvania."

Perennial, 4–30 cm. high; rosette-leaves oblanceolate or rarely spatulate, mostly acute or rarely blunt, 1–15 cm. long, 0.1–2.0 cm. broad, glabrous on both surfaces, ciliate; stem glandular-pubescent above cauline leaves; cauline leaves opposite, lanceolate, ovate, or elliptical, acute or blunt, 1–7 cm. long, 0.2–0.8 cm. broad; inflorescence cymose; calyx (1.0) 1.3–1.8 cm. long, narrowly tubular, densely glandular-pubescent; petals pink, with the blades 0.8–1.5 cm. long and the claws usually slightly exceeding the calyx.

Occasional specimens from Virginia and Maryland are intermediate between this and the preceding subspecies. These have blunt rosette leaves, but the pubescence is more like that in the northern subspecies than in ssp. *typica*.

The nomenclatorial absurdity resulting from the name *Silene caroliniana* ssp. *pensylvanica* is regrettable, but seems unavoidable. Such an example, and others, like *Cercis canadensis* and *Asclepias syriaca*, serve to demonstrate that geographical descriptive adjectives for specific names may lead to confusion.

Although *Silene caroliniana* is offered in the horticultural trade by several nurserymen, no specimens of ssp. *typica* have been seen by the writer. Specimens under that name have been ssp. *pensylvanica*. Plants offered as *S. pensylvanica* represent the northern race.

The ssp. *pensylvanica* is a plant of dry open woods, gravelly banks, and rocky places. It flowers mostly in May and early June, although in Virginia the flowering period begins in April. The range extends from southern New Hampshire and Massachusetts south through southern New York and northern New Jersey to southern Virginia and northern North Carolina, and west through central and western Pennsylvania to eastern Ohio and extreme northeastern Tennessee.—NEW HAMPSHIRE. Cheshire Co.: Alstead, ————— (M 148015). MASSACHUSETTS. Berkshire Co.: Mount Washington, *C. H. Knowlton*

and *C. Schweinfurth* (M, Ph). Middlesex Co.: Framingham, *A. J. Eames* (Corn). Norfolk Co.: Norfolk, *Thomas Morong* (M, NY). RHODE ISLAND. Warwick Co.: Warwick, *J. W. Congdon* (NY). CONNECTICUT. Fairfield Co.: Greenwich, *Lizzie Churchill* 665 (M). New Haven Co.: Milford, *E. H. Eames* (US). New London Co.: Franklin, *R. W. Woodward* (G). Windham Co.: Scotland, *C. H. Bissell* (G). NEW YORK. Bronx Co.: Bronx Park, *G. V. Nash* 113 (NY). Manhattan Co.: New York, ————— (M 148007). Nassau Co.: Westbury, *Helen Hicks* (G). Queens Co.: Jamaica, *F. C. Stewart* (Corn). Richmond Co.: Grant City, *F. W. Pennell* 9947 (Ph). Suffolk Co.: Southampton, *W. N. Clute* 30 (NY). Westchester Co.: Ossining, *P. B. Schumm & A. Gershoy* (Corn). NEW JERSEY. Bergen Co.: Alpine, *A. Gershoy* (Corn). Gloucester Co.: Westville, *C. S. Williamson* (Ph). Hudson Co.: Snake Hill, *G. B. Branin* (Bk). Middlesex Co.: South River, *K. K. Mackenzie* 3978 (M, US). Monmouth Co.: Freehold, ex herb. *O. R. Willis* (Mich). Passaic Co.: Wanaque, *Ludlow Griscom* 1200 (G). PENNSYLVANIA. Allegheny Co.: Moon Tp., *J. A. Shafer* 192 (Corn). Blair Co.: Birmingham, *Miss Davis* (Mich). Centre Co.: —————, *J. T. Rothrock* (G). Columbia Co.: Knob Mountain, *W. H. Harrison* (Ph). Dauphin Co.: Harrisburg, *F. S. Chapman* 6843 (Duke). Franklin Co.: Mt. Alto, *Jos. Illick* (M). Lancaster Co.: Chestnut Hill, *J. K. Small* (NY). Lebanon Co.: Jonestown, *H. W. Pretz* 8098 (Ph). Lycoming Co.: between Jersey Shore and Waterville, *K. M. Wiegand* (Corn). Mifflin Co.: Rawlinsville, *J. Galen* (BH). Montgomery Co.: Linfield, *B. Long* 11644 (G). Montour Co.: Danville, *H. B. Meredith* (Ph). Perry Co.: —————, *L. L. Smith* (Ph). Schuylkill Co.: McKeanburg, *K. M. Wiegand* (Corn). York Co.: Glen Rock, *W. M. Glatfelter* (M 148009). DELAWARE. Sussex Co.: Millsboro, *A. Commons* (G, M, NY, Ph). MARYLAND. Baltimore Co.: Orange Grove, *C. C. Plitt* 661 (G). Garrett Co.: Oakland, *J. D. Smith* 402 (US). Howard Co.: Ellicott City, *Bro. Arsène* 1407 (US). Montgomery Co.: Glen Echo, *C. L. Pollard* 87 (US). Prince Georges Co.: Hyattsville, *P. C. Standley* 13134 (US). Washington Co.: Harper's Ferry Heights, *S. Watson* (G). Worcester Co.: Snow Hill, *Mrs. Charles E. Moldenke* 8427 (NY). DISTRICT OF COLUMBIA. Sandy Landing, *J. H. Comstock* (Corn). VIRGINIA. Augusta Co.: Shenandoah Valley, *Eleanor A. Friend* 10427 (NY). Bath Co.: Nimrod Hall, *Lee Sowden* (Ph). Culpepper Co.: Waterloo, *H. B. Meredith* (Ph). Dinwiddie Co.: Petersburg, *E. T. Wherry* (US). Fairfax Co.: Great Falls, *A. H. Moore* 5096 (G). Fauquier Co.: Bull Run Mts., *H. A. Allard* 258 (G). Henrico Co.: Richmond, *J. R. Churchill* (G). James City Co.: Williamsburg, *E. J. Grimes* 2563 (G). Loudoun Co.: Bluemont, *P. C. Standley* 13153 (US). Montgomery Co.: Blacksburg, *W. A. Murrill* (NY). Princess Anne Co.: Creeds, *M. L. Fernald & L. Griscom* 4390 (G). Roanoke Co.: Roanoke, *E. G. Britton & A. M. Vail* (NY). Rockbridge Co.: Buena Vista, *F. F. Huber* (Ph). Rockingham Co.: Mt. Crawford, *A. A.*

Heller 788 (G, M, NY, Ph, US). Surry Co.: Claremont Wharf, *M. L. Fernald & B. Long* 7822 (G). WEST VIRGINIA¹. Greenbrier Co.: White Sulphur Springs, *W. W. Eggleston* 4355 (G, M, NY). Hampshire Co.: Okonoko, *Wilbert Frye* (Duke). NORTH CAROLINA. Franklin Co.: Bunn, *H. J. Oosting* 1730 (Duke). OHIO. Jefferson Co.: Steubenville, *H. M. Mertz* (US). TENNESSEE. Carter Co.: Elizabethtown, *H. M. Jennison* (US). HORT. Lansing, Mich., *L. H. Bailey* (BH). Poughkeepsie, N. Y., *P. J. Van Melle* (BH).

SILENE CAROLINIANA ssp. **Wherryi** (Small), n. comb. Figure 2. *S. Wherryi* Small in *Torreyia* 26: 66. 1926. Based on material from Alabama and Kentucky. The writer has examined the type which is in the herbarium at the New York Botanical Garden. It is the collection of J. B. Hobdy, no. 11, from open woods on calcareous sandstone, Albertville, Marshall Co., Alabama. The species was named for Dr. E. T. Wherry, who first brought its distinctive characters to the attention of Dr. Small. Perennial, 8–32 cm. high; rosette-leaves elliptic-lanceolate, oblanceolate, or rarely oblong-spatulate, mostly acute, occasionally obtuse, 1.5–8.0 cm. long, 0.2–1.4 cm. broad, glabrous on both surfaces, ciliate; stem and cauline leaves pubescent; cauline leaves lanceolate, 1.5–9.0 cm. long, 0.3–0.8 cm. broad; inflorescence cymose; calyx broadly tubular, densely pubescent or puberulent with white eglandular hairs, 1.5–2.2 cm. long; petals with claws equaling or sometimes exceeding calyx, blades 1–1.4 cm. long, rounded or emarginate; style about as long as ovary.

Dr. Small originally distinguished his species by the calyx equaling the claws of the petals, densely pilose with non-glandular hairs, and the style about as long as the ovary. The writer has found the pubescence and the relative width of the calyx to be most satisfactory for separating this population from ssp. *pensylvanica*. Least satisfactory is the length of the calyx. In many plants of ssp. *pensylvanica*, this equals the claws of the petals. In that subspecies, the style is from 5–6 mm. and the ovary from 4–5 mm., while in ssp. *Wherryi* the style is from 5–8 mm. and the ovary from 6–8 mm. Not enough fresh material was available to make detailed measurements possible, but these figures are perhaps suggestive. The style and ovary are both somewhat larger in ssp. *Wherryi*, but of approximately the same relative length.

The writer regrets that he must reduce to subspecific rank a species named in honor of a respected contemporary botanist, but taxonomy permits no opportunity for sentiment. Specimens, such as some of those cited under the last subspecies from West Virginia and western

¹ The following record may be added under West Virginia. Mineral Co.: New Creek, *L. H. Bailey* (BH).

Virginia, while closer to *ssp. pensylvanica* than to the present race, yet are somewhat intermediate and indicate that the two populations can not be maintained as species.

The *ssp. Wherryi* is a plant of rocky upland woods, usually in calcareous regions, although it is sometimes found in slightly acid situations. The flowering period is from April through May. As at present known, the range is broken into three areas: southern Ohio and Kentucky, Missouri, and central and northern Alabama. OHIO. Adams Co.: —————, *Conrad Roth* (G). Highland Co.: Brush Tp., *L. L. Pontius & F. Bartley* (US). Pike Co.: Byington, *E. T. Wherry* (NY). Scioto Co.: Rarden, *Delzie Demaree 10615* (NY, Ph). KENTUCKY. Fayette Co.: Lexington, *Robert Peter* (Mich). Franklin Co.: Frankfort, ————— (G). Jassamine Co.: —————, photo by *E. T. Wherry* (NY). MISSOURI. Dent Co.: between Howe and Iligo, *J. A. Steyermark 18694* (M). Laclede Co.: Hazelgreen, *E. J. Palmer 39198* (G, M, US). Phelps Co.: Jerome, *J. H. Kellogg 21* (Corn, M, NY). Pulaski Co.: Hooker, *J. A. Steyermark 7776* (M, US). Shannon Co.: 3 miles south of Dent Co.—Shannon Co. line, *J. A. Steyermark 18922* (M). ALABAMA. Autauga Co.: between Booth and Autaugaville, *R. M. Harper 3028* (BH, G, M, NY, Ph). Bibb Co.: Centerville, *E. T. Wherry* (G, US). Cullman Co.: Cullman, *Mary & Emily Molar* (?). Elmore Co.: Wetumpka, *E. T. Wherry* (G, US). Etowah Co.: Gadsden, *T. L. Boynton* (US). Jefferson Co.: Birmingham, *E. J. Palmer 35313* (G, M). Marshall Co.: Albertville, *J. B. Hobdy 11* (NY, US). HORT. Harvard Botanical Garden, ————— (G). T. M. Rock Garden, New York Botanical Garden, *K. Quinn* (BH).

From Shannon Co., Mo., the writer has seen two collections of *J. A. Steyermark*, nos. 18923 & 18924 (M) which seem to represent hybrids between *Silene virginica* L. and *S. caroliniana ssp. Wherryi*. According to the notes of the collector, these are natural hybrids occurring with the parent species.

S. caroliniana is perhaps most closely related to *S. virginica*. In separating the two species, the length of the petals, the color of the corolla, and the nature of the cauline leaves and calyx are more satisfactory than the furcation of the petals, since in *S. virginica* the petals are occasionally only slightly emarginate.

The above discussion represents what the writer, as a descriptive taxonomist, knows about the Wild Pinks. He hopes that cytologists and geneticists will now attack the problem. If the three populations designated as subspecies have different basic chromosome numbers or if they show a high degree of sterility when crossed with each other, the conclusions reached here may have to be changed.